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THE EFFECT OF RELIGION AND RELIGIOSITY ON DRUG USE AMONG A SELECTED SAMPLE OF POST SECONDARY STUDENTS IN SCOTLAND

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Background

Some studies suggest that religious variables are associated with substance use and abuse however, they tend to be compartmentalized into alcohol, tobacco, or illicit drugs. Few have examined both licit and illicit drugs. The purpose of this study was to investigate the patterns of licit and illicit recreational drug use among postsecondary students in terms of religious background and religiosity. Method: the Queensland Alcohol and Drug Study Questionnaire was completed by students attending courses in "helping profession" departments such as medicine, nursing, education, and psychology from 22 departments at universities and colleges in five Scottish cities. The sample consisted of 3117 females and 949 males.

Results

Among female students a higher percent ($p < .05$) who were Not Religious consumed over 14 drinks per week (55.5 vs 36.2%), tobacco (43.3 vs 29.3%), marijuana (32.4 vs 15. 1 %), amphetamines (8.4 vs 4. 1 %), LSD (7.4 vs 2.9%), and Ecstasy (4.8 vs 2. 1 %) compared to those who were Very Religious. A higher percent of Roman Catholic's consumed alcoholic beverages while a higher percent of Protestants, other than Church of Scotland, consumed tobacco. For all other substances those with "other" or no religious background had a higher proportion of users. There was a positive association between illicit drug use and both high alcohol consumption and tobacco use. In particular a strong association was found between tobacco and marijuana ($r = .45$). Among males a higher proportion of students ($p < .05$) who were Not Religious consumed over 21 drinks per week (61.3 vs 32.4%), tobacco, (47.8 vs 35.2%), marijuana (50.2 vs 28.3%), amphetamines (15.9 vs 8.0%), LSD (17.6 vs 8.4%), and Ecstasy (9.2 vs 5.2%) compared to students who were Very Religious. A higher percentage of male

students with "other" or no religious backgrounds used tobacco and a higher proportion of Roman Catholics used marijuana, amphetamines and Ecstasy. Illicit drug consumption was positively correlated with heavy alcohol and tobacco use. Tobacco was strongly correlated with marijuana (r=.48) and LSD (r=.42) use. It was concluded that among this sample of Scottish post-secondary students, having a strong religious commitment was associated with less substance use and that heavy drinking and using tobacco was correlated with illicit drug use. Implications of this study suggest further research to determine why lack of religious commitment, being Roman Catholic or having no religious preference are a risk factors for use of a variety of licit and illicit recreational substances.

INTRODUCTION

The relationship between religious preferences and drinking practices has been considered at length by researchers in several cultures (Mullen, Blaxter and Dyer 1986; Francis and Mullen, 1993; Mullen and Francis 1995; Engs, Hanson, Gliksman and Smythe, 1990). Writers have shown that the extent of an individual's involvement in a religious group is adversely related to his/her drinking. Although this relationship has been shown to hold across religious denominations, the strength of the association varies. In particular, differences between Protestant and Catholic groups have been noted. Schlegel and Sandborn (1979) discovered, from a sample of high school students who attended church, that fundamental Protestants were less likely to drink than were liberal Protestants or Roman Catholics. Nusbaumer (1981) from a sample of the U.S. population in 1963 and 1978 found that Catholics recorded abstention rates much lower than Presbyterians. Indeed Jessor and Jessor (1977:45) have suggested that: "Persons affiliated with religious groups that either formally or informally encourage abstinence from alcohol are more likely to be abstainers than persons affiliated with religious groups that are more permissive or liberated about drinking." Causal factors given for these findings are varied and range from group pressure and a "selected out" process for Presbyterian religious groups (Mullen, Williams and Hunt 1996), to ideas about the frequency of confession as practiced by the Catholic church (O'Carroll 1979). Some studies have hypothesised that Roman Catholicism has acted as a proxy for lower social economic class (Abbots, Williams, Ford, Hunt and West 1997). However, studies which have controlled both for social class and religion have still found persistent, though reduced effects, for religion (Mullen, Williams and Hunt 1996).

Research in Scotland (Mullen, Blaxter and Dyer 1986; Mullen, Williams and Hunt 1996) have found similar results. A study in the Western isles (Mullen et al, 1986) found higher levels of abstention and lower levels of regular drinking among the Protestants as compared to the Catholics, with those who professed no religion having the highest rates. A recent study carried out in the West of Scotland (Mullen, Williams and Hunt 1996) found that current religious affiliation was related to alcohol and tobacco use in a number of ways. Forty-nine percent of Protestant men were moderate or heavy drinkers compared with 64% for Catholic and 60% for non religious men. Thirty-two percent of Protestant women were moderate or heavy drinkers compared to 37% of Catholics and 49% of the non religious. Fewer Protestant men rated themselves as smoking (24%), compared with both Catholics (40%) and those professing no

religion (37%). A similar pattern was seen for women (36% of Protestants, 49% of Catholics and 55% of the non-religious were self-rated smokers).

A more consistent pattern emerges from studies assessing religion in terms of frequency of church attendance, which is often considered a measure of religiosity. For example, a clear inverse relation between an index of religiosity and alcohol consumption, tavern-going or alcohol related problems is reported by most writers (Cahalan, Cisin and Crossley, 1969; Cosper, Okraku and Neumann, 1987; Lubben, Chi and Kitano, 1988; Middleton and Putney 1962; Hanson 1974; Burket and White 1974; Higgens and Albrecht 1977; Schlegel and Sandborn 1979; Burkett 1980; Elifson, Petersen and Hadaway 1983).

Considerably less has been established about the relationship between religiosity and religious preferences and the use of other substances (Mullen 1990). What is known about this relationship, however, suggests that it may mirror the findings between religiosity and alcohol. A clear inverse relationship between church attendance and several types of drug use has been reported among young people (Burkett and White, 1974; Linden and Currie, 1977; Higgins and Albrecht 1977; McIntosh, Fitch, Wilson and Nyberg, 1981; Nelson and Rooney, 1982; Elifson et al 1983; Hadaway, Elifson and Peterson 1984; Adalf and Smart 1985; Sloane and Potvin 1986). Khavari and Harmon (1982) in a general population study found those who considered themselves not religious consumed more alcohol, and were more likely to smoke, use marijuana and amphetamines.

For denominational differences, Northern Ireland's Continuous Household Survey, for example, reported significant differences in tobacco use among Protestants, Catholics, and those in "other/ non" religious category. Jensen and Erickson (1979), Lorch and Hughes (1985) and Dudley, Mutch, and Cruise (1987) reported lower tobacco use among Seventh Day Adventist and Mormon youth. On the other hand, Ferraro and Jewell-Paton (1988) found that Baptists were just as likely as members of other denominations to smoke.

However, much of the research accomplished with religion and religiosity tends to be compartmentalized into either research on alcohol, or research on tobacco, or research on illegal drugs, but not on all three groups together. There is a lack of information as to possible religious related factors which may act as a protective factor to prevent young people from engaging in the use of various recreational drugs. In addition there are few reports concerning Scottish students licit and illicit drug use. One recent report concerning UK students did find a significant association between the use of cannabis and other illicit drugs such as LSD, amphetamines, and Ecstasy. However, there was no examination of the religious variables (Webb, Ashton, Kelly and Karnali, 1996).

To set our study within an epidemiological context in Scotland, in 1994 men aged 16 and over in Scotland consumed a mean of 14.4 units compared to 15.4 in England and 17.6 in Wales. Women in Scotland consumed 4.6 mean weekly units compared to 5.6 units in England and 5.3 units in Wales (HMSO 1997). In terms of total per capita alcohol consumption the UK was 19th

in the table of listed European countries in 1994 (SCA 1997). With regard to illegal drug use, cannabis is the most widely used drug in the UK. A major UK study found that 15% of the main sample of people aged 16 and over had used cannabis and 7% had taken cannabis in the last year (BMA 1997). The most important political and health related issues under discussion in Scotland, at the time of this study, were concerns about youth, in particular there was a prominent "Scotland against Drugs campaign" and action over "alcopops" (soft drinks containing alcohol aimed at the teenage market). In the age group under discussion, there was also concerns over ecstasy and the acute long-term health consequences of its use.
The purpose of the study was to examine the alcohol, tobacco and drug use patterns among higher education students in Scotland in terms of religiosity and religious background. We wished to discover if there is a significant difference between students, who consider religion important and those to whom religion is not important, for recreational drug use. Also if there is a significant difference between students with Church of Scotland, Other Protestant, Roman Catholic or "other" or no religious backgrounds in terms of recreational substance use. The relationship of illegal drugs with alcohol and tobacco was also examined as some studies have suggested those who use tobacco and are heavy alcohol users are also more likely to use other substances.

METHODS

Sample Selection

This sample in this study was a convenience sample collected during autumn term 1994 at Scottish tertiary institutions. The heads of department at major universities and colleges in Aberdeen, Dundee, Glasgow, Edinburgh and Inverness, which taught students in the helping professions (medicine, nursing, education, psychology and social work), were contacted about participating in this study. Of the 28 departments which responded to an initial written inquiry, 22 were included in the study. Of the six who were not part of the sample, three Nursing colleges agreed to participate but since they had post graduate training only they were not asked to take part.

One Medical, one Nursing and one Education department at three separate institutions in different cities refused to participate. Several reasons for this were given. They included: they did not think it proper to ask future physicians, nurses and teachers about illegal drug use; they refused to participate in any studies were illegal activities were asked; they were afraid that published results could lead to inflammatory newspaper headlines which could harm their profession; it was "illegal" to ask students if they engaged in illegal activities; they did not have the time; or finally that the quality of their students precluded any drug use.

The departments participating in the survey were requested that a class from each year of study, if possible, be sampled. Because of the divergence in types of curriculum this was not possible in all cases. For example, Medical students at one university and Nursing students at two colleges in their last year were not available as they were on clinical assignments.

The size of classes ranged from about 15 to almost 300 depending upon the field of study and the institution. Instructions as sanctioned by the Indiana University Ethics committee concerning voluntary nature of participation, confidentiality and directions for non-participation were projected on a screen by means of an overhead projector and read by the first author at 18 institutions. In four departments the instructor administered the questionnaires and were asked to follow the same procedure.

Students were told not to place any identifying marks on their papers so as to retain the anonymity of each questionnaire. In addition the confidentiality of each of the departments and institutions was assured. Each student and institution was given a code number known only to the first author. Students who did not wish to participate in the study were asked to read during the testing time of about 15 minutes and to pass back blank questionnaires. Blank questionnaires were used to count the non-participation rate. A total of 4,500 questionnaires were distributed in the classrooms. In small classes of under 50 students, all participated in the study. In large classes about 8% came back not completed. Of the total number distributed, 4,150 questionnaires were collected. Of this total number 85 were incomplete and thus eliminated leaving a sample of 4065 students or a completion rate of about 92%.

Sample Characteristics

The sample consisted of 3117 females and 949 males. The high percent of females in the sample is a reflection of the high proportion of females found in the helping professions. Of the total sample 30.4% were under age 19, 47.1% between 19 and 24 years of age and 22.5% over 24 years. The mean age was 21.6. Of the sample 10.3% were medical, 20.0% nursing, 29.8% education, 17.2% psychology students. Other disciplines attending the helping profession classes included students from the physical sciences (6.7%) and social science (5.7%) and Social Work (3.9%) while the remaining were from "other" disciplines such as law, religion, arts and commerce. In terms of religious background, 40.9 % were Church of Scotland, 7.1% Church of England, 13.1% Other Protestants, 18.3% Roman Catholic and 20.6% none or other religions. Church of England and other Protestants were collapsed into the category "other Protestants". This group of 673 students constituted 20.2% of the sample.

Questionnaire

For items asking for quantity and frequency of substance use, the Queensland Alcohol and Drug Study Questionnaire (Engs, 1980; Engs and Rendell, 1987) was used. This questionnaire contains six quantity-frequency items from the Student Alcohol Questionnaire (Engs, 1974) such as, "how often do you usually drink lager or beer" to determine alcohol consumption. In addition the instrument contains 10 items regarding other drug uses such as, "how frequently have you used marijuana over the past year"? Excluding demographic factors, the instrument, with the original sample of Australian students, demonstrated a Spearman-Brown reliability coefficients of .89. Cronbach alpha reliability was .86. Due to the fact that this present study was done with a

wide variety of Scottish students, the reliability calculations were repeated. For the whole sample the Spearman-Brown reliability coefficient for unequal lengths was .78. The Guttman's split half technique revealed a reliability coefficient of 74, and the Cronbach's alpha revealed a coefficient of 70.

Questions to determine religion and religiosity were requested. Students were asked in what religion they were raised which included: "Church of Scotland", "Church of England", "Other Protestant", "Roman Catholic" or "Other or None". To determine religiosity, a four point Likert scale was used. Students were asked how important religion was to them ("very", "moderately", "slightly", "not at all"). For this study, "Importance of religion" is religiosity. These were then collapsed to produce a dichotomous variable of "Very Religious" and "Not Religious" for statistical analyses.

Calculations

Quantity-frequency of alcohol and other drug use

In recent years it has become common to calculate the mean number of drinks, or units, per week or day of all alcoholic beverages consumed (Lemmon, Tan and Knibbe, 1988; Engs, et al., 1990; Thomas, et al, 1993; Engs 1990; Engs and Hanson, 1994; Gaziano, et al., 1993). Calculations for this method are based upon the "rule of thumb" that an average glass of pub beer (12 ounces) is roughly equivalent to an average size glass of wine (5 ounces) or shot of spirits (one and half ounce) in terms of grams (approximately 13) of absolute alcohol (Thomas, et al, 1993). The instrument assessed the usual frequency and quantity of beer, wine and spirits, consumed by the student. The frequency response categories were assigned constant values so as to be able to calculate units per week (every day=7.0, at least once a week but not every day=3.5, at least once a month but less than once a week=0.5, more than once a year but less than once a month=O. 12, once a year or less or not at all=O). To compute the drinks of alcohol consumed on a weekly basis, a mean score was calculated by multiplying the quantity by the recoded frequency weight for each beverage type and summing the three scores.

Several recent reports suggest that up to 21 drinks per week for males and 14 drinks for females is not associated with acute or chronic health consequences (Engs and Aldo-Benson, 1995; Garg, Wagener, and Madans, 1993; Gaziano, et al., 1993; Bofetta and Garfinkel, 1990). In the UK these limits are the recommended guidelines for "moderate" alcohol consumption (Thomas, et al, 1993). Recently even higher levels have been recommended by the British government as being moderate drinking (Department of Health, 1995). However, because this study was conducted when the old guidelines were still recommended and because these higher guidelines are being disputed, the older UK limits will be used. "Heavier" or "above the maximum recommended limit" 'for this study is considered above 14 drinks per week for females and 21 drinks per week for males.

For tobacco and illicit drug use, students were asked how frequently they had consumed the substance over the past year. Any use during this time categorized the student as a "user" versus those who had not used the substance as a "non user."

The majority of studies in the UK and else where have shown that a higher percentage of men consume alcohol and recreational drugs cornpared to women (Thomas et al, 1993; Ghodse & Howse, 1994). A recent study by Engs and Teijlinger (1997), using a sub-sample of the data set for this report, found a higher percentage of male students smoked tobacco, marijuana and drank more alcohol more frequently than the female students. Therefore, for analysis of these data separate calculations for males and females were accomplished. Chi square, t-test, one-way analysis of variance, and Pearson rho calculations using the SPSS (Norusis, 1990) program were utilized. For the Pearson rho calculations, the following dichotomous codes were used. Very Religious= 1, Not Religious=2, did not use the substance = 1, used the substance during the past 12 months=2.

RESULTS

Alcohol

Importance of religion

Among female students about 93% had consumed an alcoholic beverage during the preceding 12 months with a mean of 18.1 drinks per week. Table I shows that significantly more females who were Not Religious consumed wine (X^2=31.0, p <.001), spirits (X^2 =139.4, p <.001) and beer X^2=120.2, p <.001) compared to Very Religious ones. A higher proportion of students who were Not Religious consumed over 14 drinks per day (X^2 =104.5, p<.001) compared to Very Religious students. In addition students who were Not Religious consumed more alcohol (t=10.4, df=2275.27, p <.001), 20.6 drinks per week, compared to students who were Very Religious (13.4).

Pearson rho results revealed a significant (p <.001) positive correlation between the Importance of Religion and consuming over 14 beers per week (r=.18) as shown in Table II. Lack of religious preference was associated with this heavier alcohol consumption

TABLE I Result of Chi-Square Analysis Showing the Percent of Scottish Female Students Using Recreational drugs by Importance of Religion and Religious background

	Importance of Religion		*Relgion*			
	Very	*Not*	*Church of Scotland*	*Other Prot.*	*Roman Catholic*	*Other/ None*
	N=1064	*N=2044*	*N=1346*	*N=460*	*N=545*	*N=599*
Alcohol						
Wine	83.9	92.6*	92.3	88.9	92.3	82.5*
Spirits	72.4	89.7*	86.0	81.3*	84.8	80.4+
Beer	67.8	83.3*	77.3	78.8	81.9	75.6
>14 drinks	36.2	55.5*	47.1	46.6	53.9	50.6+
Tobacco	29.3	43.3*	33.9	42.7	42.3	42.0*
Marihuana	15.1	32.4*	21.6	25.7	32.2	33.6*
Amphetamines	4.1	8.4*	4.8	7.2	9.8	9.1*
Cocaine	1.8	2.4	1.4	2.0	2.0	4.2+
Hallucinogen						
LSD	2.9	7.4*	3.6	5.5	7.9	9.5*
Ecstasy	2.1	4.8*	2.2	3.8	5.9	5.5*
Heroin	0.3	0.4	0.1	0.5	0.4	0.8

* $p < .001$ + $p < .05$.

TABLE II Pearson rho correlation coefficients between importance of religion and drugs used at least once during the proceeding 12 months drugs for females (N= 3117)[a]

	Impt. of Relig	*> 14 drinks*	*Tobacco*	*Marijuana*	*Amph.*	*Cocaine*	*LSD*	*Ecstasy*	*Heroin*
Impt. of Relig.	1.0000	.1832*	.1443	1857*	.0716*	.0020	.0630*	.0607+	-.0036
>14 drinks		1.0000	.2397*	.3282*.	.1669*	.0105	.1297*	.0932*	.0010
Tobacco			1.0000	.4542*	.2206*	.0420*	.1932*	.1487*	.0566+
Marijuana				1.0000	.3563*	.0455+	.3238*	.2563*	.0340
Amphetamines					1.0000	.1330*	.5240*	.6418*	.1050*
Cocaine						1.0000	.0897*	.1557*	.1533*
LSD							1.0000	.5024*	.0570+
Ecstasy								1.0000	.1427*
Heroin									1.0000

a. Religion: Not Religious=2, Very Religious=1. Drug used during past 12 months. Yes=2, No=1
* $p < .001$ + $p < .05$

About 91% of the male students had consumed some form of alcohol during the proceeding 12 month period with a mean of 27.0 drinks per week. Chi-square analyses revealed that a significant difference due to religiosity was found. A higher proportion of students, who were Not Religious compared to those who were Very Religious, consumed wine (X^2=14.6, p <.001), spirits (X^2 =44.9, p <.001), and beer (X^2 =66.1, p<.001). About twice as many of these Non Religious students (X^2 =66.9, p < .001) consumed over twenty-one drinks per week compared to the other group (See Table III).

TABLE III Result of Chi-Square Analysis Showing the Percent of Male Scottish Students Using Recreational Drugs by Importance of Religion and Religious background

	Importance of Religion		*Relgion*			
	Very	*Not*	*Church of Scotland*	*Other Prot.*	*Roman Catholic*	*Other/ None*
	N=287	*N=656*	*N=305*	*N=213*	*N=194*	*N=233*
Alcohol						
Wine	76.5	86.5*	83.4	85.8	84.9	79.7
Spirits	68.5	87.6*	80.9	81.2	84.3	81.0
Beer	75.6	93.6*	89.1	88.3	91.8	83.6
>21 drinks	32.4	61.3*	54.1	48.8	56.7	50.4
Tobacco	35.2	47.8+	37.2	45.8	43.8	51.1+
Marihuana	28.3	50.2*	38.6	39.9	50.8	46.6+
Amphetamines	8.0	15.9+	10.9	9.9	18.0	16.5+
Cocaine	3.1	4.4	3.9	2.8	2.6	6.5
Hallucinogen						
LSD	8.4	17.6*	11.6	12.7	19.3	17.2
Ecstasy	5.2	9.2+	6.3	5.2	12.0	9.5+
Heroin	1.7	0.5	1.0	0.5	1.0	0.9

* p < .001 + p < .05.

A t-test revealed that males who were Not Religious consumed almost twice (p <.001, df=571.4, t=6.7) as many drinks per week (30.6) compared to the Very Religious students (18.8). In addition a Pearson rho revealed a positive correlation (p <.001) between the Importance of

TABLE IV Pearson rho correlation coefficients between importance of religion and drugs used at least once during the proceeding 12 months drugs for males(N= 949)[a]

	Impt. of Relig	*> 21 drinks*	*Tobacco*	*Marijuana*	*Amph.*	*Cocaine*	*LSD*	*Ecstasy*	*Heroin*
Impt. of Relig.	1.0000	.2661*	.0968+	.1867*	.0191	.0777+	.0932+	.0663+	-.0533
>21 drinks		1.0000	.2931*	.3487*	.1831*	.0724+	.2187*	.1369*	-.0360
Tobacco			1.0000	.4794*	.2723*	.1213*	.2914*	.2027*	.0152
Marijuana				1.0000	.4038*	.1096+	.4210*	.2813*	.0162
Amphetamines.					1.0000	.2759*	.6342*	.6418*	.0847+
Cocaine						1.0000	.2547*	.3620*	.1966*
LSD							1.0000	.5312*	.0823+
Ecstasy								1.0000	.1230*
Heroin									1.0000

a. Religion: Not Religious=2, Very Religious=1. Drug used during past 12 months. Yes=2, No=1
* $p < .001$ + $p < .05$.

Religion (r=.27) and consuming over 21 beers per week as shown in Table IV.

Religious preference

For female students a significant difference between religious groups was found for the percentage consuming wine (X^2=44.3, p <.001) and spirits (X^2=14.2, p <.05) but not for beer. Likewise a significant difference (X^2=9.2, p <.05) was found in terms of consumption over 14 drinks per week. A higher percentage of Roman Catholics consumed wine, spirits and over 14 drinks per week compared to the other religious groups (See Table 1).

The results of a one-way analysis of variance revealed a significant difference (p <.05, F=3.8) due to religious background. The post hocScheffe indicated that the differences was between Roman Catholic and Church of Scotland students who consumed a mean of 20.0 and 17.2 drinks per week respectively. The "other Protestants" consumed 17.3 and students who had "Other or No" religious background consumed a mean of 19.2 drinks per week.

For males Table II shows there was no significant difference between the religious groups in terms of the percent of students consuming various types of beverages. Results of one-way analysis of variance also found no differences in the mean drinks consumed per week.

Heavy alcohol consumption and its relationship to other drug use

Table II shows that there was a positive association (p <.001) for heavier alcohol consumption and for the use of tobacco, amphetamines, marijuana, LSD and Ecstasy. However, there was no association with consuming over 14 drinks per week with either cocaine or heroin use. For males there was a positive association (p <.001) of consuming over 21 drinks per week and these same variables. There was a slightly positive association (p <.05) for cocaine and no association for heroin use. For both the male and the female students, consuming over the recommend amount of alcohol revealed a correlation at or above r=.33 for marijuana and r=.24 for tobacco use.

Tobacco

Importance of religion

Tobacco was used by 38.4% of the females. For females a significantly (X^2=63.9, p <.001) higher percentage of students who were Not Religious had used tobacco. Among males 44.0% had consumed tobacco, and like the females, a higher proportion who were Not Religious had consumed tobacco (X^2 = 16.3, p <.05).

Religious background

For females there was a significant difference due to religious background (X^2 =62.4, p <.001) and tobacco use during the proceeding 12 months. The highest proportion of smokers were Roman Catholics and the lowest were students with Church of Scotland backgrounds. For

males a significant difference (X^2 =7.8, p <.05) in the percentage of tobacco users was also found. A higher proportion of those with Other or No religious background used tobacco compared to the other groups. As was found with female students, those with Church of Scotland backgrounds had the lowest number of tobacco users.

Tobacco and its relationship to other drug use

Tobacco use for both female and male students was positively correlated with the use of all illicit drugs with the exception of heroin for males. For both females (r = .45) and males (r = .48) consuming tobacco was strongly correlated with the use of marijuana. A correlation coefficient over r=.20 was found for tobacco and amphetamine use among females and for amphetamines, LSD, and Ecstasy use among males

Marijuana

Importance of religion

Marijuana use was reported by and 26.5% of females. About twice as many female students who were Not Religious had consumed marijuana (X^2 =26.8, p <.001) compared to those who were Very Religious. For males 43.5% had smoked marihuana. Students who were Not Religious were almost twice (X^2 =32.8, p < .001) as likely to have used marijuana compared to students who were Very Religious.

Religious background

A significant difference (X^2 =98.7, p <.001) was found for marijuana use and religious backgrounds for female students. Students with Other or No religious preferences, were most likely, and Church of Church of Scotland students, were least likely, to have used marijuana. A significant difference (X^2= 11.4, p<.05) between religious backgrounds was also found for male students. Roman Catholics, were most likely, and Church of Scotland males, were least likely to have used marijuana.

Marijuana and its relationship to other drug use

For both female and male students, there was a positive correlation (p <.001) for marijuana use with all other illicit drugs with the exception of heroin. A correlation coefficient over r = .25 was found for Ecstasy and over r=.32 for both amphetamines and LSD. For males a correlation coefficient of r=.28 was found for Ecstasy and over r=.40 for both amphetamines and LSD.

Amphetamines

Importance of religion

Amphetamines were used by 6.9% of females and 13.5% of males. There was a significant (X^2 =20.1, p <001) difference among female students for religiosity in regards to amphetamine use. Twice as many students who were Not Religious had consumed amphetamines over the past 12 months compared to Very Religious students. This was also found for male students (X^2 =10.3, p <.05).

Religious background

For female students there was a significant (X^2 = 20.7, p <.001) difference in terms of amphetamines use. Roman Catholic students had the highest, while Church of Scotland students had the lowest, proportion of users. A significantly higher (X^2=9 .3, p <05) percentage of Roman Catholic male students had used amphetamines compared to students from other or no religious backgrounds. Protestants, other than Church of Scotland, had the lowest use.

Amphetamines and their relationship to other drug use

Amphetamine use was found to be highly correlated with LSD and Ecstasy for both female and male students. For both LSD and Ecstasy correlation coefficients were r= .52 and r= .64 respectively for females and r=.63 and r=.64 respectively for males. As reported previously, this substances was also highly correlated with marijuana use.

Cocaine

Importance of religion and religious background

Cocaine use was reported by 4.0% of males and 2.2% of females. For both the female and male samples there was no significant difference due to religiosity and the use of cocaine. For females there was a significant difference between religious background (X^2= 9.7, p <.05). About twice as many individuals who gave Other or No religious preference had used cocaine during the previous 12 months. However, there was no significant difference between religious groups among males.

Cocaine and its relationship to other drug use

For females, other than for alcohol consumption of over 14 drinks per week, there was a positive association between cocaine use and the use of other substances. Correlation coefficients were about r=.1 for most of the substances. Among males, cocaine use was positively correlated with all licit and illicit substances. Among males correlation coefficients were above r=.25 for amphetamines, LSD and Ecstasy.

Hallucinogens

Importance of religion

LSD was used by 5.9% of female and 14.8% of male and while Ecstasy was used by 3.9% of female and 8.0% of male students. Among females there was a significant difference is the use of LSD (X^2 =12.6, p <.001) and Ecstasy (X^2 = 11.4, p < .00 1). Students who were Not Religious being twice as likely to have used the substances. There was a significant difference among males for both LSD (X^2=8.2, p < .05) and Ecstasy (X^2=4.1, p <.001) use in terms of religiosity. As with females, non-religious males were about two times as likely to have used the substance compared to Very Religious males.

Religious background

For females there was a significant difference between the religious groups for both LSD (X^2 =31.5, p < .00 1) and Ecstasy (X^2 =20.2, p <.001). Other or No Religious affiliated students were most likely and Church of Scotland students least likely to have used LSD. The students with the highest percentage of Ecstasy users were Roman Catholic while the lowest were Church of Scotland. Among males there was a significant difference in the use of Ecstasy (X^2 =8.4, p <.05) but not for LSD between the four religious preferences. The highest proportion of users were found among Roman Catholics and the lowest among Other Protestants.

Hallucinogens and their relationship to other drug use

There was a positive association between the use of LSD and the use of Ecstasy with all of the other substances for both the female and the male samples. Individual correlation coefficients have been discussed above.

Heroin

Heroin use was found is such a small proportion of both female and male students that it may fall within errors of data entry. Only 12 females and 8 males, or less than one percent of the sample, had indicated they had used heroin.

DISCUSSION

The overall results suggest that for both female and male students in this sample, those who were not religious were more likely to consume both licit and illicit drugs. In general students who had "other" or no religious preference or who were Roman Catholic, were also more likely to use licit and illicit substances. There was a strong association between heavy alcohol, and any tobacco, consumption and the use of illicit substances. A limitation to this study was that this convenience sample may not be representative of all students attending helping professional classes in postsecondary institutions in Scotland. In addition helping profession students may be more inclined to minimize their drug use and over-state their religiosity due to socially perceived acceptable behavior which could have affected the results. In spite of these potential limitations,

a significant degree of both licit and illicit drug use was found in this sample. From these results five main issues emerge which deserve further discussion.
First, these findings serve to corroborate earlier studies carried out in Scotland and the UK. They show that the most proscriptive behaviors are to be found among those respondents affiliated to Protestant denominations. Those who are the most liberal in their reported drug use are those professing either "other" or no religious or Roman Catholic backgrounds. For the young adults in our study their religious affiliations and the strength of their religious beliefs have a clear impact on both their licit and illicit drug use.

Second, these results show a strong relationship between the Importance of Religion and drug use. Other research has also noted the increasing importance of implicit, as opposed to explicit, religiosity within society and that "believing" has gained in significance over "belonging" (Davie 1990). A much higher proportion of both nonreligious males and females consumed over the maximum safe limit of alcohol for their gender and used tobacco, marijuana, amphetamines, LSD and Ecstasy compared to the very religious students. However, in contrast to Davie's thesis, there were differences due to religious background. The "other" or no religious background females were about twice as likely to use marijuana and other illicit drugs compared to the two Protestant groups. About a half of Roman Catholic males had consumed marijuana compared to about a third of the two Protestant groups. A higher proportion of Roman Catholic males had used various illicit drugs compared to the other groups.

Third, earlier work by the second author on school children both in the UK and in Holland (Francis and Mullen 1993; Mullen and Francis 1995) discovered a similar relationship between religious affiliation and religiosity and attitudes towards a wide selection of drug use. The present findings give weight to the idea that attitudes in early youth may be followed through to actual behavior in young adulthood. This has obvious implications for health education; that drug prevention programs need to be targeted at children in their early teens.

Fourth, the results also highlight the seemingly anomalous position of the Roman Catholic group; having a higher consumption pattern than Protestant groupings and often being similar to the non-religious. This however serves to corroborate another study carried out in the West of Scotland that hypothesized religious selection as an explanation for similar findings with regard to alcohol and tobacco use (Mullen, Williams and Hunt 1996). In this study Protestants were shown to be a more self-selected group than Catholics, with drinkers rejecting, or being rejected from, denominational affiliations, while at the same time abstainers are retained. The health related behaviors of the Protestants and the non-religious therefore become polarized, while the Catholics hold within their church a more broad spectrum of drinking and smoking styles.

Fifth, heavy alcohol and any tobacco consumption was associated with illicit drug use. Tobacco in particular was highly correlated with marijuana and positively associated with amphetamine, LSD and Ecstasy use. Marijuana use was strongly associated with amphetamines, LDS and Ecstasy. A recent report with a general population of second year university students in the UK (Webb, Ashton, Kelly and Karnali, 1996) also "found a significant association between the use of

cannabis and other illicit drugs" such as LSD, amphetamines, Ecstasy. Perhaps it is an easy step to go from smoking tobacco to smoking marijuana. If marijuana use becomes frequent, the social environment may be conducive to other illicit drug experimentation. Or perhaps helping profession students who smoke, even though they realize it is harmful, do so because they are more likely to experiment with a variety of risky activities.

Implications of this study suggest health education programs for helping profession students concerning the association of heavy alcohol, and any tobacco consumption, with illicit drug use. Since medical and nursing students have access to various drugs, they need to be advised about these risk factors. More importantly, the results of this study lead to many questions for further research. For example, why are highly religious individuals less likely to use all substances, both licit and illicit? Is strong religious adherence a substitute for the "high" of substance use and/or social interactions? Is there a difference in personality between individuals who find religion important and those who do not? Are individuals who are more religious less likely to be risk takers and engage in other risky behaviors? If young people are prevented from smoking, will this reduce their risk of illicit drug use? If a person stops smoking and reduces his/her alcohol consumption will he/she be less at risk for illicit drug use? These questions need to be asked in further studies to determine what it is about religiosity, and even religious background, that appears to be a protective factor against illicit drug use.

In conclusion among this sample of Scottish post-secondary students, lack of religious commitment and having either a Roman Catholic or "none or other" religious background, was associated with both licit and illicit drug use. Both heavy alcohol and tobacco consumption was associated with illicit drug use.

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REFERENCES

Abbotts J, Williams R, Ford G, Hunt K. And West P. Morbidity and Irish Catholic descent in Britain: an ethnic and religious minority 150 years on. Social Science and Medicine. 45 (1):3-14,1997.

Adalf, EM, Smart RG. Drug use and religious affiliation, feelings and behaviour. British Journal of Addiction 8:163-171, 1985.

Bofetta, P. & Garfinkel, L. Alcohol drinking and mortality among men enrolled in an American Cancer Society prospective study. Epidemiology. 1:342-348, 1990.

British Medical Association (BMA). The Misuse of Drugs. Amsterdam: Harwood Academic Publishers, 1997

Burkett SR, White M. Hellfire and delinquency: another look. Journal for the Scientific Study of Religion 13:455-462,1974.

Burkett SR. Religiosity, beliefs, normative standards and adolescent drinking. Journal of Studies on Alcohol 41:662-671, 1980.

Cahalan D, Cisin IH, Crossley HM. American Drinking Practice: A National Study of Drinking Behaviour and Attitudes.New Brunswick: Rutgers Centre for Alcohol Studies, 1969

Cosper RL, Okraku I0, Neumann B. Tavern going in Canada: a national survey of regulars at public drinking establishments. Journal of Studies on Alcohol 48:252-259,1987.

Davie G. Believing without belonging: is this the future of religion in Britain? Social Compass 37:455-469, 1990.

Dudley RL, Mutch PB, Cruise RJ. Religion, faith and drug use among Seventh-Day Adventist youth in North America. Journal for the Scientific Study of Religion 26:218-233,1987.

Elifson KW, Petersen DM, Hadaway CK. Religiosity and delinquency. Criminology 21:505-527,1983.

Engs, R.C. Queensland Alcohol and Drug Study Questionnaire. Brisbane, Australia:Queensland University, 1980.

En.gs, R.C. and Aldo-Benson, M. The association of alcohol consumption with self reported illness in university students. Psychological Reports 76: 727-736, 1995.

Engs, R.C. and Hanson, D.J. Gender differences in drinking patterns and problems among college students: A review of the literature. Journal Alcohol and Drug Education 35:36-47,1990.

Engs, R.C. and Rendell, K.H. Alcohol, tobacco, caffeine and other drug use among nursing students in the Tayside Region of Scotland: a comparison between first-and final-year students. Health Education Research:Theory and Practice 2(4):329- 336, 1987.

Engs, R.C., Hanson, D. J., Glicksman, L. and Smythe, C. The religious variables: Comparison of Canadian and American college students'alcohol abuse problems. British Journal of Addictions, 85: 1475-82, 1990.

Engs, R. C. and Tejhngen, E. Correlates of alcohol, tobacco and marijuana use among Scottish postsecondary helping-profession students. Journal of Studies on Alcohol, 58(4):435-444, July 1997.

Ferraro KF, Jewell-Patton G. Filled with the "holy smoke": religion and tobacco in Carolina. Review of Religious Research 30:59-72, 1988.

Francis LJ, Mullen K. Religiosity and attitudes towards drug use among 13-15 year olds in England. Addiction 88:665-672, 1993.

Francis LJ, Mullen K. Denominational and sectarian influences on adolescent attitudes toward drug use in England and Wales. Journal of Drug Education. 42(3):81-96, 1997.

Garg, R., Wagener, D.K., and Madans, J.H. Alcohol consumption and risk of ischernic heart disease in women. Archive of Internal Medicine153: 1211-1216, 1993.

Gaziano, J.M., Buring, J.E., Breslow, J.L., Goldharber, S.Z,. Rosner, R., VanDenburgh, M., Willett, W. and Hennekens, C.H. Moderate alcohol intake, increased levels of highdonsity lipoprotein and its subfractions, and decreased risk of myocardial infarction. New England Journal of Medicine 329:1829-34, 1993.

Ghodse, A.H, Howse, K., Substance use of Medical students: a nationwide survey, Health Trends 26:85-88, 1994.

Golding, J.F. and Cornish, A.M. Personality and life-style in Medical students: Psychopharmacological aspects. Psychology and Health 1: 287-301, 1987.

Hadaway CK, Elifson KW, Petersen DM. Religious involvement and drug use among urban adolescents. Journal for the Scientific Study of Religion 23:109-128, 1984.

Hanson DJ. Drinking attitudes and behavior among college students.Journal of Alcohol and Drug Education 19:6-14, 1974.

Higgins PC, Albrecht GL. Hellfire and delinquency revisited. Social Forces 55:952-958, 1977.

Jensen GF, Erickson ML. The religious factor and delinquency: another look at the hellfire hypothesis. In: Wuthnow R, ed. The Religious Dimension: New Directions in Quantitative Research. New York: Academic Press, 157-178, 1979.

Jessor R, Jessor S. Problem Behaviour and Psychological Development: A Longitudinal Study of Youth.New York: Academic Press, 1977

Khavari KA, Harmon TM. The relationship between the degree of professed religious belief and the use of drugs. International Journal of the Addictions. 17(5):849-57,1982.

Linden R, Currie R. Religiosity and drug use: a test of social control theory. Canadian Journal of Criminology and Correction 19:346-355, 1977.

Lorch BR, Hughes RH. Religion and youth substance use. Journal of Religion and Health 24:197-208, 1985.

Lubben JE, Chi I, Kitano HHL. Exploring Filipino American drinking behavior. Journal of Studies on Alcohol 49:26-29, 1988.

McIntosh WA, Fitch SD, Wilson JB, Nyberg KL. The effect of mainstream religious social controls on adolescent drug use in rural areas. Review of Religious Research 23 :54-75, 1981.
Middleton R, Putney S. Religion, normative standards and behaviour. Sociometry 25:141-152,1962.

Mullen K, Blaxter M, Dyer S. Religion and attitudes towards alcohol use in the Western Isles. Drug and ALcohol Dependence 18(l):51-72,1986.

Mullen K. Religion and health: a review of the literature. International Journal of Sociology and Social Policy 10(l) :85-96, 1990.

Mullen K, Francis LJ. Religiosity and attitudes towards drug use among Dutch school children. Journal of Alcohol and Drug Education41(l):16-25, 1995.

Mullen K, Williams R, Hunt K. Irish descent, religion, and alcohol and tobacco use. Addiction 91(2):243-254, 1996.

Nelson HM, Rooney JR. Fire and brimstone, lager and pot: religious involvement and substance use. Sociological Analysis 43:247-256,1982.

Norusis, M. SPSS Advanced Statistics: Student Guide, SPSS INC.: Chicago, 1990.

Nusbaurner MR. Religious affiliation and abstinence: a fifteen year change. Journal of Studies on Alcohol 42:127-131,1981.

O'Carroll, MD. The Relationship of Religion and Ethnicity to Drinking Behaviour: a Study of North European Immigrants in the United States. Phd. Dissertation, University of California: Berkeley, 1997.

OPCS. Living in Britain: Results of the 1994 Household Survey. London: HMOS, 1996.
Pettersson T. Religion and criminality: structural relationships between church involvement and crime rates in contemporary Sweden. Journal for the Scientific Study of Religion 30:279-291,1991.

Schlegel RP, Sanborn MD. Religious affiliation and adolescent drinking. Journal of Studies on Alcohol. 40:693-703, 1979.

Scottish Council on Alcohol. UK Alcohol Statistics. Glasgow: SCA, 1997.

Sloane DM, Potvin RH. Religion and delinquency: cutting through the maze. Social Forces. 65:87-105,1986.

Tliomas, M., Goddard, E., Hickman, M. and Hunter, P. General Household Survey 1992. Office of Population Censuses and Surveys, HMSO:London, 1993.

Webb E, Ashton CH, Kelly P, Kamali F Alcohol and drug use in UK university students. The Lancet. 348:922-25, 1996.